## Space Weather Forecast

Issued on Friday 10 January 2025 at 01:15 Local

**This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Chance of isolated Moderate class flares.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Low solar activity during the last 24 hours with only Common-class flares, peaking at at 09/2140 UTC from the largest region on the disc. There was one long duration Common-class flare associated with a filament lift of near the centre disc at 09/1119 UTC. The only region currently of note is in the northwest, which has been responsible for the majority of any recent activity. The eleven other regions on the visible disc remain small and simple at present.

Due to a lack of recent SOHO coronagraph imagery combined with large gaps in STEREO coronagraph imagery the detection of Coronal Mass Ejections (CMEs) is more uncertain than usual. A possible filament eruption near the centre disc may bring some enhancement at Earth, however this can not be correlated with coronagraph imagery at present.

**Solar Wind / Geomagnetic Activity:** Solar winds were initially slight elevated around 410km/s but declined to background levels, around 350km/s then possibly followed by a weak fast wind onset, increasing to 390km/s. The Interplanetary Magnetic Field, was initially weak rising to moderate from 09/1130 UTC. The north-south component, was variable, generally weak but with a moderate negative interval around 09/1432 UTC. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) was at background levels.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Low to Moderate with an ongoing chance of isolated Moderate-class flares.

**Solar Wind / Geomagnetic Activity:** A lack of coronagraph imagery means that CME analysis is difficult and comes with increased uncertainty. A possible filament eruption from near the centre disc may bring some enhanced geomagnetic activity, most likely on Day 3 (12 Jan). Solar winds are showing signs of some weak disturbance, perhaps an early onset of a weak coronal hole fast wind. Wind speeds from this feature are likely to be not much above 400 km/s.

Geomagnetic activity is expected to be mostly Quiet to Unsettled, perhaps with the odd Active interval Day 1 (10 Jan) with any high speed stream influence. Any CME influence is likely to be

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rather dense, with a chance of G1 to G2 Minor/Moderate storms and a slight chance of G3/Strong storms intervals on Day 3 (12 Jan).

**Energetic Particles / Solar Radiation:** Solar radiation is expected to remain near background levels, with only a slight chance of rising in response to any notable flares.

## Geomagnetic Storms

| Geomagnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| **Minor or Moderate** | **G1 to G2** | No | 5 | 20 | 25 | 15 |
| **Strong** | **G3** | No | 1 | 5 | 10 | 5 |
| **Severe** | **G4** | No | 1 | 1 | 1 | 1 |
| **Extreme** | **G5** | No | 1 | 1 | 1 | 1 |

## Radio Blackouts - X-Ray Flares

| X-Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| **Active** | **R1-R2 (M Class)** | No | 50 | 50 | 50 | 50 |
| **Very Active** | **R3-R5 (X Class)** | No | 10 | 10 | 10 | 10 |

## Solar Radiation Storms (High Energy Protons)

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}sr^{-1}s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| **Active** | **≥ S1** | No | 10 | 10 | 10 | 10 |
| **Very Active** | **≥ S3 *** | No | 1 | 1 | 1 | 1 |
| * S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$) | | | | | | |

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